Summary Report of the World Trade Center Technical Review Panel Meeting

November 15, 2004

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Prepared for:

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NOTICE

This report was prepared by Eastern Research Group, Inc., an EPA contractor, as a general record of discussion held during the eighth meeting of the World Trade Center Technical Review Panel held November 15, 2004, at St. John's University. This report captures the main points and highlights of the meeting. It is not a complete record of all details discussed, nor does it embellish, interpret, or enlarge upon matters that were incomplete or unclear. Statements represent the individual view of each meeting participant, and may or may not represent the analyses or positions of EPA.

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ACRONYMS

CBPR	Community-Based Participatory Research
CDC	Centers for Disease Control and Prevention
COPC	contaminant of potential concern
EPA	U.S. Environmental Protection Agency
EPIC	Environmental Photographic Interpretation Center
FEMA	Federal Emergency Management Agency
HEPA	High-Efficiency Particulate Air
HUD	U.S. Department of Housing and Urban Development
HVAC	heating, ventilation, and air conditioning
µg/dl	micrograms per deciliter
$\mu g/ft^2$	micrograms per square foot
NCEA	National Center for Environmental Assessment
NEIC	National Enforcement and Investigation Center
NYC	New York City
ORD	Office of Research and Development
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbon
UCL	upper confidence limit
USGS	U.S. Geological Survey
WTC	World Trade Center

EXECUTIVE SUMMARY

After the collapse of the World Trade Center (WTC) and the subsequent release of contaminants into the environment, the U.S. Environmental Protection Agency (EPA), other federal agencies, New York City (NYC), and New York State public health and environmental authorities focused on numerous cleanup, dust collection, and ambient air monitoring activities to ameliorate and better understand the human health effects of the disaster. While these monitoring and assessment activities were ongoing, EPA began planning for a program to clean and monitor residential apartments. Residents impacted by the WTC dust and debris were eligible to request federally funded monitoring and/or cleaning of their residences. The cleanup continued into the summer of 2003, by which time EPA had cleaned and monitored 3,400 apartments and monitored an additional 800 apartments.

Since then, EPA convened a technical panel of experts who have been involved with the WTC assessment activities to provide advice on the effectiveness of these and related programs. Paul Gilman, EPA Science Advisor, serves as the chairperson, and Paul Lioy, Professor of Environmental and Community Medicine at the Environmental and Occupational Health Sciences Institute of the Robert Wood Johnson Medical School-UMDNJ and Rutgers University, serves as vice chair. This report summarizes the eighth technical panel meeting in New York City, held at St. John's University in Saval Auditorium on November 15, 2004.

Dr. Gilman facilitated the meeting and presented the agenda, which consisted of:

- Welcome, Purpose of Today's Meeting, and Opening Remarks
- Overview Presentation of Draft Sampling Proposal
- An Evaluation of Region 2 Wipe Sampling Data from the 2002 EPA Cleanup Program
- Report from Signature Subgroup
- Report from Community Participation Committee
- Morning Panel Discussion
- Morning Public Comments/Question-and-Answer Session
- Afternoon Panel Discussion
- Afternoon Public Comment/Question-and-Answer Session
- Adjourn

EPA representatives and individual panelists proposed the following key conclusions and suggestions during the meeting:

- EPA and one panelist agreed that the title of the draft sampling proposal could be changed to "Draft Proposed Sampling Program to Determine Remaining Indoor World Trade Center Contamination Three Plus Years After 9/11" (depending on when sampling actually occurs).
- The public comment period for the draft sampling proposal has been extended to January 3, 2005. (The public comment period has subsequently been further extended to January 18, 2005.)

- One panelist clarified that the landlord is required to pay for sampling and remediation if a lead-poisoned child is identified in the residence. If there is not a lead-poisoned child, then there are no requirements for the landlord.
- One panelist noted that 25 micrograms per square foot ($\mu g/ft^2$) is not the most conservative screening level for lead.
- One panelist emphasized the importance of notifying residents of the proper precautions they should take during construction or demolition activities near their buildings.
- Due to staffing and funding issues, the U.S. Geological Survey (USGS) is more heavily relying on the EPA with regard to the WTC signature study. One panelist commented that it is important that USGS continue to be involved in the development of the WTC signature.
- The glass phases, specifically slag wool, appear to be the most useful for identifying WTC dust; however, background samples are needed to confirm this observation.
- EPA stated that technical experts and other agencies will review the certified WTC signature method.
- According to the scientific literature and data collected so far, antimony does not appear to be a useful component of the WTC dust signature.
- EPA emphasized the need for background samples. Anyone interested in participating should contact Nancy Adams at 919-541-5510 or Pat Evangelista at 212-637-4447.
- One panelist recommended using the terms "frequently cleaned," "infrequently cleaned," and "less accessible" to describe location of samples.
- One panelist suggested that, if cleanup is triggered because of a concentration detected in an accessible area, then the inaccessible areas should be cleaned as well.
- One panelist commented that testimony was presented at the City Council hearings that certain office and household equipment might act as a reservoir for contaminated dust. He agreed to help find the person who presented the testimony.
- One panelist commented that windowsills and window wells should be sampled to address recontamination.
- One panelist thought that variable cleanup criteria could be applied based on the level of accessibility.
- EPA agreed that methodologies for High-Efficiency Particulate Air (HEPA) vacuum, particle counting, and wipe sampling need to be clearer in the sampling proposal.
- As a matter of policy, EPA does not want to force access to buildings whose owners are unwilling to participate in the sampling program.
- One panelist agreed to explore individual employee's rights to allow access for sampling in the workplace.
- One panelist offered to look into the issue of sampling at park and school playgrounds and report his findings to the panel.
- EPA's goal is to sample one unit per every two floors. A building will not be brought into the sampling program if EPA is not granted access to a sufficient number of units within that building.

- EPA and one panelist commented that, if the protocol is followed, an adequate, representative number of units will be sampled to determine whether the 95 percent upper confidence limit (UCL) on the mean of all measurements in the building associated with WTC dust exceeds the cleanup criteria for at least one contaminant of potential concern (COPC).
- The current sampling plan proposes that if there is a validated WTC signature, but it is not found in the unit, no cleanup action will be taken, even when there is an exceedance of a COPC benchmark. One panelist suggested that the unit be offered cleanup if a COPC exceeds the benchmark, regardless of whether the WTC signature is present.
- EPA stated that if a WTC signature cannot be identified or is unreliable, they will share the general results of the sampling with the public and the panel to ask their input regarding possible cleanup or other follow-up activities, and will use that input along with other information, to determine next steps.
- EPA stated that a cleanup protocol similar to the EPA Region II Clean and Test Program will be used, with some modifications based on lessons learned.
- One panelist suggested developing educational packages to explain the reasons for the decision to not offer cleanup.
- One panelist did not think that WTC money should be made available for non-WTC contamination.
- EPA stated that both the panel and the community will be involved in the decisions for what steps need to be taken after the sampling is completed.
- EPA noted the need for a communication plan.
- One panelist suggested developing a disclosure statement that outlines exactly how the information will be shared and with whom.
- EPA agreed to check that the nondisclosure forms signed by the panelists were sufficient to allow them access to the sampling results.
- One panelist suggested that, to meet the health needs of the community, an occupational health center should be opened downtown.
- One panelist proposed that the NYC Department of Health and Mental Hygiene help educate the resident primary care physicians in WTC-related illnesses.

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1. INTRODUCTION

After the collapse of the World Trade Center (WTC) and the subsequent release of contaminants into the environment, the U.S. Environmental Protection Agency (EPA), other federal agencies, New York City (NYC), and New York State public health and environmental authorities focused on numerous cleanup, dust collection, and ambient air monitoring activities to ameliorate and better understand the human health effects of the disaster. While these monitoring and assessment activities were ongoing, EPA began planning for a program to clean and monitor residential apartments. Residents impacted by the WTC dust and debris were eligible to request federally funded monitoring and/or cleaning of their residences. The cleanup continued into the summer of 2003, by which time EPA had cleaned and monitored 3,400 apartments and monitored an additional 800 apartments. Since then, EPA has been developing a draft sampling plan to study the contamination and recontamination of spaces in lower Manhattan that may have been contaminated by the WTC disaster.

EPA convened a technical panel of experts who have been involved with the WTC assessment activities to provide advice on the effectiveness of these and related programs. Paul Gilman, EPA Science Advisor, serves as the chairperson, and Paul Lioy, Professor of Environmental and Community Medicine at the Environmental and Occupational Health Sciences Institute of the Robert Wood Johnson Medical School-UMDNJ and Rutgers University, serves as vice chair. Members of the panel include representatives from the federal agencies directly involved in the air quality response and monitoring, the NYC Departments of Health and Environmental Protection, and outside experts.

EPA's goals in forming this panel and holding this series of meetings are:

- To obtain more input on ongoing efforts to monitor the situation for New York residents and workers impacted by the collapse of the WTC.
- To help guide EPA's use of the available exposure and health surveillance databases and registries to characterize any remaining exposures and risks, to identify any unmet public health needs, and to recommend any steps to further minimize the risks associated with the aftermath of the WTC attacks.

Eight technical panel meetings and one conference call have been held to date:

- March 31, 2004, at the Alexander Hamilton U.S. Customs House
- April 12, 2004, at the Tribeca Performing Arts Center at the Borough of Manhattan Community College
- May 12, 2004, conference call
- May 24, 2004, at Saval Auditorium at St. John's University
- June 22, 2004, at Saval Auditorium at St. John's University
- July 26, 2004, at Saval Auditorium at St. John's University
- September 13, 2004, at Saval Auditorium at St. John's University
- October 5, 2004, at Saval Auditorium at St. John's University
- November 15, 2004, at Saval Auditorium at St. John's University

This report summarizes the presentations and panel discussions at the November 15, 2004 technical panel meeting. Information on each of these meetings is provided on EPA's Web site (http://www.epa.gov/wtc/panel).

1.1 Panel Attendees

The following panel members were not present at this technical panel meeting:

- Patricia Clark
- Jessica Leighton
- Paul Lioy
- Joseph Picciano
- Sven Rodenbeck
- Jeanne Stellman

Christopher D'Andrea served as an alternate for Jessica Leighton. Mr. D'Andrea is a representative from NYC's Department of Health and Mental Hygiene. Rob Tranter served as an alternate for Joseph Picciano. Mr. Tranter is a Region 2 Environmental Officer for the Federal Emergency Management Agency and the Department of Homeland Security. A complete list of WTC expert technical review panel members is available on EPA's Web site (http://www.epa.gov/wtc/panel/members.html).

1.2 Purpose and Agenda

The purpose of this technical panel meeting was to:

- Hear comments from panel members and the public on the External Review Draft entitled, *Draft Proposed Sampling Program to Determine Extent of World Trade Center Impacts to the Indoor Environment*.

The agenda for this meeting is provided in Attachment A and covered the following topics:

- Welcome, Purpose of Today's Meeting, and Opening Remarks
- Overview Presentation of Draft Sampling Proposal
- An Evaluation of Region 2 Wipe Sampling Data from the 2002 EPA Cleanup Program
- Report from Signature Subgroup
- Report from Community Participation Committee
- Morning Panel Discussion
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2. WELCOME, PURPOSE, AND OPENING REMARKS

Paul Gilman, EPA Science Advisor

Dr. Gilman welcomed the participants, reviewed the agenda for the meeting, and asked for comments.

3. OVERVIEW PRESENTATION OF DRAFT SAMPLING PROPOSAL

Paul Gilman, EPA Science Advisor

Dr. Gilman began by reviewing the current objectives of the draft sampling proposal:

- To estimate the geographic extent of WTC contaminants of potential concern (COPCs).
- To provide the data necessary to determine whether a Phase II sampling should proceed.
- To validate a method to identify a signature for WTC dust and/or combustion products.

The proposal suggests using a spatially balanced strategy to select sampling locations that are approximately evenly dispersed. This approach can be applied to a wide range of populations that can be defined in terms of two-dimensional coordinates and is generally statistically more efficient than simple random samples. Both residential and commercial buildings will be eligible for selection.

The goal is to sample one unit per two floors, facing Ground Zero. Wipe and vacuum samples will be taken in areas characterized as "exposure areas," such as tabletops and rugs and in "non-exposure, inaccessible areas," such as tops of refrigerators and behind bookshelves. The exposure area samples will be used to facilitate cleanup decisions. The non-exposure area samples will be used to determine the extent of the WTC impact and whether further sampling is needed.

The COPC cleanup criteria is based on either (1) health-based benchmarks developed by Region 2 for the 2002 Cleanup Program (polycyclic aromatic hydrocarbon [PAH] and lead) or (2) three times normal background, which has precedence in the Superfund National Priority Listing (asbestos and man-made vitreous fibers).

The decision criteria for unit cleanup is as follows:

- Cleanup will occur if the validated signature is present and there is at least one exceedance of a cleanup criterion.
- Cleanup will <u>not</u> occur if either the validated signature is missing or none of the COPCs exceeds the cleanup criteria.

The decision criteria for building cleanup is as follows:

- Cleanup will occur if the 95 percent upper confidence limit (UCL) on the mean of all measurements in the building associated with WTC dust exceeds the cleanup criteria for at least one COPC.

Dr. Gilman noted that, at the request of the community, the public comment period for the draft sampling proposal has been extended an additional 45 days (comments are to be submitted by January 3, 2005). (The public comment period has subsequently been further extended to January 18, 2005.)

Panel Discussion

David Newman remarked that the spatially balanced sampling map is heavily skewed to the north and east, and underrepresents the northwest and southwest. Gilman replied that the map was only meant to serve as an example of the principle; it was not an actual representation of the spatially balanced sampling proposal.

Marc Wilkenfeld asked whether any further information about sampling public parks was available. Catherine McVay Hughes mentioned that residential neighborhoods as well as public schools have playgrounds. Krish Radhakrishnan noted that the NYC Department of Environmental Protection did a visual inspection of the exterior of 20–30 buildings and found inconsistent results. He offered to look into the issue of sampling at park playgrounds and schools and report his findings to the panel. David Prezant noted that sandboxes are the real issue, and that if there are only a few public sandboxes, it might be more cost-effective to replace the sand rather than test it. Gilman suggested that the panel determine what sampling has been done post-9/11 and whether there is a maintenance program that replaces the sand on a regular basis.

McVay Hughes asked for clarification on the use of three times background as the cleanup criterion. Gilman responded that background is based on the average concentration of a number of samples. Three times that average indicates that something significant, outside the range of normal variability, is occurring. Mark Maddaloni said that in an ideal world they would conduct a t-test, but he agreed that three times background gives a good indication that the level is different than background. Steven Markowitz asked whether the criteria could be based on two times background or a 95 percent UCL on the mean. Gilman responded that EPA is open to suggestions. They chose three times background because there was a precedent in Superfund to use that criterion.

4. AN EVALUATION OF REGION 2 WIPE SAMLING DATA FROM THE 2002 EPA CLEANUP PROGRAM

Henry Kahn, EPA Office of Research and Development (ORD), National Center for Environmental Assessment (NCEA)

During the 2002 Region 2 Cleanup Program, over 1,500 pre- and post-cleaning wipe samples were taken from 263 apartments located in areas of confirmed impact, probable impact, possible impact, and no impact from dust and debris from the collapse of the WTC towers. Henry Kahn's presentation focused on the approximate 1,000 pre-cleaning sample results. Dr. Kahn noted that contaminants were rarely detected above health-based benchmarks, with the exception of lead. About 12 percent of the lead measurements exceeded the health-based benchmark of 25 micrograms per square foot ($\mu g/ft^2$). He then presented the results considering the following three factors:

- Location—Environmental Photographic Interpretation Center (EPIC) zone and distance from Ground Zero.
- Age of building.
- Floor of building where measurement was taken.

The overall results do not appear "meaningfully different" among the four EPIC zones, and among the five distance categories. Higher concentrations tended to be found on lower building floors, across zones. The clearest relationship was between lead concentration and the age of the building (i.e., older buildings tended to have higher lead concentrations), suggesting that lead-based paint might be the cause. However, some high lead concentrations were also observed in newer buildings. The highest measurements of lead appeared to be related to all three factors.

Dr. Kahn also reported the results of calculating upper 95 percent confidence limits on the building mean lead levels. The draft sampling proposal includes a comparison of the 95 percent UCL on the building mean to the health-based benchmark for a contaminant as a criterion for deciding to clean a building. The results showed that the 95 percent UCL on the mean for about a third of the buildings exceeded the health based benchmark of 25 $\mu g/ft^2$ for lead.

Panel Discussion

Newman felt that it was inappropriate for EPA to try and preempt the effort to analyze for lead during the sampling effort. He thought that the presentation, once again, tried to link elevated lead levels in building near the WTC with lead-based paint, rather than the WTC collapse. In response, Kahn noted that all the information he presented was descriptive and emphasized that there was no statistical manipulation of the data.

Prezant, on the other hand, thought that the presentation addressed the panel's concern about the impact older buildings might have on the lead results. He said that since elevated levels were also found in newer buildings, lead-based paint is not the sole cause of the lead levels. Therefore, lead should remain as a COPC.

In response to questions from Morton Lippmann, Maddaloni explained that EPA followed the U.S. Department of Housing and Urban Development (HUD) guidelines. Most samples were taken in accessible areas, such as floors and countertops. While a few samples were taken from window wells or sills, they do not represent the majority of samples, nor are they driving the data. He went on to explain that the highest lead concentration (6,790 $\mu g/ft^2$) was considered an outlier. Further investigation determined that the sample was taken from a chest with flaking lead-based paint. There was no attempt to confirm that the older homes with higher levels of lead actually contained lead-based paint.

Maddaloni clarified that 25 $\mu g/ft^2$ of lead found in accessible areas is a screening guideline that indicates that further investigation is warranted. Lead is considered a hazard if greater than 40 $\mu g/ft^2$ of lead is found in accessible areas. Windowsills and window wells have higher benchmarks—100 $\mu g/ft^2$ and 250 $\mu g/ft^2$, respectively. Lippmann thought it would be useful to see the data in comparison to the health-based benchmark of 40 $\mu g/ft^2$ as well.

Newman noted that 25 $\mu g/ft^2$ is not the most conservative screening level. He said that the Centers for Disease Control and Prevention's (CDC's) *Assessment and Remediation of Residential Lead Exposure; Managing Elevated Blood Lead Levels Among Young Children;*

Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention contains the following:

> "Available evidence indicates that current and proposed guidelines for levels of lead in dust on floors may not adequately protect young children, and that levels well below these guidelines are achievable and are often present even before intervention. Therefore, the goal should be to obtain post-intervention dust lead levels that are as low as is feasible, which is generally less than 10 $\mu g/ft^2$ on floors, and that are at or below baseline levels."

Due to the legal ramifications of analyzing the samples for lead, Christopher D'Andrea clarified that the landlord is required to pay for sampling and remediation if a lead-poisoned child is identified in the residence. The clearance levels for remediation are set at 40 $\mu g/ft^2$ for floors, 100 $\mu g/ft^2$ for windowsills, and 250 $\mu g/ft^2$ for window wells. If there is not a lead-poisoned child, then there are no requirements for the landlord; however, it would be strongly recommended that some action be taken.

D'Andrea also explained that, as of August 2, 2004, NYC's Department of Health and Mental Hygiene responds to all cases of a child with blood lead levels above 15 micrograms per deciliter ($\mu g/dl$). The previous standard was either one case of 20 $\mu g/dl$ or two consecutive cases of 15 $\mu g/dl$. He noted that no childhood lead levels in lower Manhattan required environmental investigation in 2001 and 2002.

Prezant, Gilman, and Kahn discussed the importance of sampling a sufficient number of units per building. Kahn noted that using the 95 percent UCL on the mean is the "better" way to characterize the building, but that building-by-building complications could arise. Gilman re-assured everyone that EPA's goal is to sample one unit per every two floors. A building will not be brought into the sampling program if EPA is not granted access to a sufficient number of units within that building.

A community member noted her frustration with the previous sampling effort. She agreed with Newman that there is a major effort to attribute elevated lead levels to anything other than the WTC. Due of the abundance of scientific articles, she does not believe that EPA can maintain that all of the lead came from an interior paint source. Because it was mentioned that construction activities may have impacted the lead levels in some of the building units, McVay Hughes emphasized the importance of notifying residents of the proper precautions they should take during construction or demolition activities near their buildings.

5. REPORT FROM SIGNATURE SUBGROUP

Greg Meeker, U.S. Geological Survey (USGS) Research Geologist
Nancy Adams, ORD, National Homeland Security Research Center

Greg Meeker mentioned that due to staffing and funding issues, U.S. Geological Survey (USGS) is more heavily relying on the EPA with regard to the WTC signature study. He said that one of the primary researchers working on the project has moved to EPA's National Enforcement and Investigation Center (NEIC), which is only a couple of blocks away from the USGS office in

Denver, Colorado. Mr. Meeker is hopeful that the work will continue there, with some USGS involvement.

Dr. Gilman mentioned that the purpose of the WTC signature study is to develop and validate a WTC signature, establish background levels for the COPCs, and establish appropriate methods for sample collection.

Nancy Adams reported the progress on development of the WTC dust signature. Samples taken from four contaminated sites are being analyzed. However, background samples are still needed to validate the signature and determine background levels for lower Manhattan. Dr. Adams noted that they are maintaining a repository and can provide samples to test additional proposed signatures. For example, the samples are also being used to evaluate the RJ Lee proposed signature.

At a prior meeting, Mr. Prezant suggested investigating whether antimony can be a component of the WTC signature, due to the elevated levels found in NYC firefighters. Based on the results of a literature review, Dr. Adams informed the panel that antimony does not appear to be a reliable component of the WTC dust signature—antimony was only found in some of the dust samples, there was large variation between concentrations found, and antimony levels in WTC dust were not notably different from urban background dust.

Mr. Meeker provided an update on the data collected and analyzed to date, which includes two indoor samples and four outdoor samples. He began by reviewing the sample preparation techniques and analytical methods being used to categorize particles found in the WTC dust. He presented four pie charts depicting the abundance of gypsum found (ranging from 55.3 percent to 76.0 percent), and noted that gypsum was behaving as expected (i.e., it dissolved with exposure to rain). Mr. Meeker presented another series of five pie charts that showed the abundance of slag wool ranging from 93 percent to 99.1 percent. The glass phases, specifically slag wool, appear to be the most useful for identifying WTC dust, however, background samples are needed to confirm this observation. Mr. Meeker finished by presenting four line graphs depicting the number of particles found. He noted that the mean particle size is about 3 microns.

Panel Discussion

Prezant commented that having an EPA laboratory finish the WTC signature study could potentially lead to problems. He noted that USGS is an expert with a proven track record, and little or no prior association with WTC issues. EPA involvement could lead to the community having a lack of confidence in the signature. He suggested that money be shifted to USGS to allow them to finish the WTC signature study. Gilman responded that NEIC is EPA's enforcement laboratory and is used to operating under the highest standards for litigation. Meeker acknowledged the concern, but said he is confident that the work will be done well by NEIC. Further, the USGS technician working on the WTC signature study is now at NEIC, and USGS is close enough to still have some involvement in the study. Prezant suggested making it a joint effort, with Meeker as a supervisor of the study. Gilman confirmed that the panel will continue to seek Meeker's involvement and that an independent peer review of the study results

will be conducted. Gilman mentioned that after the signature is determined, a method that can be reproduced in a commercial laboratory will need to be developed.

Markowitz expressed skepticism about the use of slag wool in the signature, due to the lack of background samples to confirm the absence of slag wool. Meeker responded that, based on information available in the scientific literature, slag wool is not expected to be present in the background samples. But he cannot confirm that until the background samples are collected and analyzed. Lippmann commented that slag wool is a unique component of the WTC.

Markowitz also wondered whether Meeker was still optimistic about the ratio of the components being useful in developing a WTC dust signature, since the gypsum disappearance was disproportional. Meeker responded that the ratios for the other components hold well, and that gypsum is behaving as expected. He is still optimistic and does not think the gypsum ratios will be an issue. McVay Hughes questioned how the use of a humidifier would affect the gypsum levels in the dust. Meeker said that it could affect the relative gypsum content, but since gypsum is not the critical material, he was not concerned.

Frederica Perera asked about the aerodynamics of the particles in terms of dispersion. Lippmann replied that the aerodynamic diameter of a long fiber is about three times its physical diameter. Additional information would be needed to answer her question. However, he noted that visible dust fell out within a relatively short distance from the WTC. Gilman commented that evaluating the background samples would help to understand the geographic variability based on the aerodynamic properties of the slag wool.

Wilkenfeld wondered whether WTC dust could be differentiated from the dust generated during construction or demolition. McVay Hughes wondered how the results would change depending on whether an apartment had open or closed windows. Meeker responded that those types of parameters should be looked at, but that he cannot evaluate their impact without additional samples.

Prezant suggested that, instead of only reviewing the literature to determine whether antimony is part of the WTC dust signature, investigators should look for antimony in the samples that are being collected for the WTC signature study. Meeker responded that the data indicate elevated antimony levels in comparison to average Eastern U.S. soil, but not in comparison to urban dust. The leach data also show elevated antimony. This agrees with the findings in NYC firefighters. However, he reiterated that antimony does not appear to be a useful component of the dust signature.

Wilkenfeld asked whether antimony was tested in anyone other than firefighters. Prezant explained that biomonitoring is “incredibly expensive,” and therefore, could not be provided to everyone. Under a cooperative agreement, CDC tested the firefighters, and since the antimony results were well below clinically significant, health-based levels, other populations were not tested. Prezant clarified that his position on antimony is for its potential use in the signature, not as a COPC.

Newman commented that it is difficult to evaluate the data without specific criteria that would validate the signature. Meeker responded that the first step is evaluating the components of the dust, and the second step is validating the results. Lippmann suggested looking at the RJ Lee signature study to provide validation of the WTC signature study. Meeker agreed. Adams again emphasized the importance of obtaining background samples. She said that they need as many samples as possible because the samples will also be used to determine the three-times-background decision criteria.

A community member asked EPA to explain what actions the Agency has taken to obtain background samples. Gilman responded that the need for these samples has been repeatedly discussed at the panel meetings. Adams said that she has asked all the panel members and the panel meeting attendees, as well as commercial real estate-owning organizations, and managers of city-owned buildings, and federally owned buildings for permission to obtain background samples. So far, people have been reluctant to let EPA sample. Adams emphasized that the sampling is minimally invasive. She said it only takes about two hours and can be done anytime of the day or night, or even on the weekend. Maddaloni commented that, in the Region's 2002 Background Study, locations were in Manhattan, past 79th Street. He noted that samples could probably also be taken in Midtown (between 34th and 59th Streets). Prezant suggested sampling rooms at the public libraries. A community member said that building owners should allow sampling as a matter of public service. Anyone interested in participating should contact Nancy Adams at 919-541-5510 or Pat Evangelista at 212-637-4447.

6. REPORT FROM COMMUNITY PARTICIPATION COMMITTEE

Catherine McVay Hughes, Community Liaison
Micki Siegel de Hernandez, Community Member

Ms. McVay Hughes and Micki Siegel de Hernandez presented a report reflecting the results from a community meeting held on November 10, 2004. Ms. McVay Hughes noted that Dr. Gilman and Lisa Matthews attended the meeting and that this was the final meeting for Marcia Pinkett-Heller, the Community-Based Participatory Research (CBPR) facilitator. She outlined the activities since the October panel meeting, which include submitting two choices for technical experts, reviewing EPA's Proposed Monitoring Program, and requesting names of demolition experts.

Ms. Siegel de Hernandez said that the community is concerned with the "process." The community specifically requested that EPA not publish the sampling proposal until the community had a chance to review it; however, EPA posted the sampling plan in the Federal Register on October 20th. Dr. Gilman agreed to a 45-day extension (until 1/3/05) to allow the community technical consultants time to review the most recent version. Further, EPA did not endorse and incorporate the seven principles presented at the October panel meeting. The community is also concerned about how Dr. Gilman's departure will affect the panel and implementation of the sampling plan. For the eighth time, the community is requesting transcripts of the monthly panel meetings.

The community has the following suggestions for the proposed sampling program:

- Change the title to "Draft Proposed Sampling Program to Determine Remaining Indoor World Trade Center Contamination Three Years After 9/11."
- Add a fourth objective: "To identify indoor spaces impacted by WTC contaminants, evaluate the need for cleanup, and provide cleanup where warranted in the presence of signature if validated and without signature if not validated."
- Include three types of samples: frequently cleaned, infrequently cleaned, and inaccessible.
- Include dust sampling of window wells and "dead spots" in heating, ventilation, and air conditioning (HVAC) systems
- Include Brooklyn in Phase I.

Ms. McVay Hughes and Ms. Siegel de Hernandez also presented several questions and asked for clarification on several topics related to the sampling design, sampling methodology, COPCs, the signature, background levels, the sampling scope, triggers for action (cleanup), and participation. The following are a few key questions and concerns:

- How many samples will be taken per unit?
- What is the location of the samples?
- If one or more units are found to be contaminated, does that trigger a whole building cleanup?
- What does a whole building cleanup consist of?
- If a building is found to be contaminated, will testing commence to determine levels of contamination in surrounding buildings?
- Who will have access to the information?
- Clarify the use and effectiveness of the microvac, High-Efficiency Particulate Air (HEPA) vacuum, and wipe sampling methodologies.
- Work with the community to have a truly spatially balanced and geographically representative approach to building selection.
- The community is considering additional COPCs.
- What are the criteria to scientifically validate the signature?
- What materials might be used in the WTC signature?
- How will background be determined for asbestos, man-made vitreous fibers, and silica?
- Employees and residents should be able to allow sampling, even if the employer or landlord does not.
- If WTC COPCs are found, EPA needs to commit to comprehensive cleanup.

The community continues to be concerned about the 9/11-related cleanup, demolition, and construction at Deutsche Bank (130 Liberty Street), Fitterman Hall (30 West Broadway), and 130 Cedar Street. They request that the expert panel address these concerns and insist that EPA "meet its legal and moral obligation to make sure that the surrounding area is not recontaminated with WTC-related hazardous substances remaining in these buildings."

A formal letter containing the seven principles was sent to EPA Administrator Mike Leavitt on October 26, 2004. This statement of principles is endorsed by over 50 community, residential, tenant, religious, disaster recovery, social service, environmental, small business, and labor organizations.

Panel Discussion

Gilman clarified that even though EPA has the authority to access buildings for cleanup, the access would need to be granted on a case-by-case basis through the legal system. EPA's policy is to have permission of the building owner to take the samples. He did not think that an employee could request sampling without the business' or lessee's willingness. EPA will follow up on this issue further with the Occupational Safety and Health Administration (OSHA).

One community member suggested allowing Siegel de Hernandez to become a member of the expert panel. Gilman respectfully declined the suggestion, saying that he could not allow groups to self-appoint panel members, nor would it be good to have an open-ended panel size.

Prezant commented that community support is crucial to the success of the sampling program. He suggested the panel use this discussion time to attempt to answer the questions outlined in the report from Community Participation Committee. The panel then proceeded to do so.

Community Suggestion/Concern: Change the title.

Prezant and Gilman agreed that the title could be changed. Gilman noted that "Three Years" should be changed to "Three Plus Years" depending on when the sampling will actually occur.

Community Suggestion/Concern: Include Brooklyn.

Markowitz pointed out that Figure 1 shows 10 points in Brooklyn with possible dust from the WTC collapse. Gilman responded that EPA staff visited the sites and found that there was ongoing construction near those sites in Brooklyn at the time of the WTC collapse. Further, evidence other than the EPIC analysis suggests that the dust that settled in Brooklyn is not on the same order as the dust that settled in Manhattan.

Community Suggestion/Concern: Include three types of samples: frequently cleaned, infrequently cleaned, and inaccessible.

Siegel de Hernandez clarified the concern that areas labeled as "non-exposure/inaccessible" still have the potential for exposure (e.g., people do [infrequently] clean the tops of bookcases). The community is concerned that if there is an exceedance in these areas, they will not be cleaned because they are labeled "non-exposure/inaccessible." Gilman and Lippmann noted that the health-based benchmarks are based on daily, long-term exposure. Because a person could be occasionally exposed to higher concentrations of a COPC without substantially adding to the body burden, the same benchmarks cannot be applied to inaccessible areas. However, variable cleanup criteria could be applied based on accessibility (e.g., 10 times the accessible level benchmark could be used for the inaccessible areas).

Both Prezant and Newman thought that the key issue associated with contamination in inaccessible areas is the potential for that contamination to resuspend/deposit into frequent exposure areas. Prezant suggested a compromise—that if cleanup is triggered because of a concentration detected in an accessible area, then the inaccessible areas should be cleaned as well. He felt that if the accessible areas do not trigger cleanup, then the inaccessible areas have not recontaminated the accessible areas to a level of concern. Gilman acknowledged that there are many hypothetical situations that could result from the sampling. He suggested that these types of decisions be made after the data are collected and thoughtfully interpreted.

Wilkenfeld commented that testimony was presented at the City Council hearings that certain office and household equipment (e.g., computers and desk fans) might act as a reservoir for contaminated dust. Lippmann and Maddaloni replied that it would be difficult to standardize and measure dust in these areas in a manner that would allow comparison to health-based criteria. Prezant did not think that it was appropriate since these types of items are generally replaced every few years. Gilman asked Wilkenfeld to obtain additional information about whether this is an actual circumstance or a hypothetical scenario. Wilkenfeld agreed to help find the person who presented the testimony. Gilman also suggested that perhaps the issue could be investigated as part of the background study.

A community member was concerned with combining two terms with different meanings: "infrequently cleaned" and "inaccessible." "Currently inaccessible areas" have never been cleaned and should have original WTC dust. However, people could be exposed to that dust at some point in the future if the item needs to be replaced. Prezant thought that this scenario would not likely pose a health concern. Gilman commented that the current plan proposes to sample the areas most important from a public health perspective (i.e., the areas that are accessible, both frequently and infrequently). McVay Hughes suggested using the terms "frequently cleaned," "infrequently cleaned," and "less accessible" (instead of "inaccessible").

Community Suggestion/Concern: Include dust sampling of window wells and "dead spots" in HVAC systems.

Gilman said that benchmarks are available for windowsills and window wells, but that accessibility should be considered. McVay Hughes said that windowsills and window wells should be included as part of the recontamination issue.

Gilman relayed that an EPA technical expert, Dr. Les Sparks, said that dead spots do not characterize HVAC systems. Adams agreed to put Sparks in contact with Newman.

Community Suggestion/Concern: Clarify the microvac, HEPA vacuum, and wipe sampling methodologies.

Lippmann corrected a misinterpretation of a poorly written statement on page 23. He said that the HEPA vacuum sample would collect particles smaller than 5 microns. In fact, it would collect a higher percentage of smaller particles. Gilman agreed that the HEPA vacuum and particle-counting methodologies need to be clearer in the sampling proposal.

Maddaloni and Evangelista explained that the sampling would follow HUD guidelines, which allows for wipe sampling of solid surfaces, as well as porous surfaces such as carpets. They agreed that this level of specificity should be incorporated into the sampling proposal.

Community Suggestion/Concern: How many are a "sufficient number" of buildings and units within a building?

Gilman replied that, as long as protocol is being followed, there should not be an instance where only one or two units are sampled in a building. If there are not enough volunteer units within a building, then the building will not be included as part of the sampling plan.

Evangelista thought that 120 to 160 buildings (30 to 40 per zone) were estimated to be included in the sampling proposal. Gilman said that the current proposal plans to sample one unit for every two floors, biased toward units that face the WTC. Kahn said that the goal of the program is to sample units that are representative with respect to certain specified criteria.

Kahn noted that to achieve good spatial distribution, EPA needs as many volunteers as possible. Gilman reiterated that if more people volunteer their units than needed, then not everyone would be asked to participate in the sampling. Prezant suggested and McVay Hughes agreed that the community should be involved in selecting which units to sample. Gilman cautioned against self-selection.

McVay Hughes commented that whether a person's window was open during the WTC attack needs to be part of the decision tree. Gilman agreed that there are several parameters needed to characterize the units. One community member expressed concern that smaller five- or six-story buildings with fewer apartments might be overlooked.

Community Suggestion/Concern: If one or more units is found to be contaminated, does that trigger a whole building cleanup?

Gilman and Prezant commented that, if the protocol is followed, an adequate, representative number of units will be sampled to determine whether the 95 percent UCL on the mean of all measurements in the building associated with WTC dust exceeds the cleanup criteria for at least one COPC.

Community Suggestion/Concern: If a building is found to be contaminated, will that building alone be cleaned? Will testing commence to determine levels of contamination in surrounding buildings? Or alternatively, will the sampling program be used to define a cleanup zone?

Gilman responded that none of the cleanups will occur automatically. Decisions will be made after the data have been collected and evaluated. The panel and the public will be involved in that decision-making process. Next steps might involve further sampling to define localized regions of contamination. If there are not many volunteers in the beginning, EPA might consider a rolling enrollment to keep the door open for future participation. Prezant, Newman, and Markowitz thought it was important to add some of EPA's philosophy and/or principles

concerning cleanup decisions and goals to the sampling proposal, even if it was vague. A community member also thought that the CBPR should be involved in the decision-making process and included in the proposal.

Community Suggestion/Concern: What does a whole building cleanup consist of? Will it include cleaning all habitable spaces? All common areas? All components of the mechanical ventilation system?

Gilman replied that a problem could arise if there is an unwilling owner who does not allow access to the common areas. Individuals have the option to allow cleaning or not. EPA does not intend to force people to have their units/buildings cleaned. McVay Hughes noted that children play in the hallways. Gilman reminded the panel that common space sampling is not being proposed because some panel members thought that those areas are more likely to be cleaned and therefore, are not representative. Prezant commented that it is important for EPA to understand the legal requirements and who is responsible for paying for the cleanup.

Community Suggestion/Concern: Clarify EPA's right under 40 CFR 300.400(d) and other federal statutes to access public and private property to collect public health information and to remove hazardous materials.

Prezant, in paraphrasing a comment by Gilman earlier, said that tenants and businesses that lease spaces could allow EPA access for sampling. Newman said that he would explore individual employee's rights to allow access to the workplace. A community member said that EPA should investigate how other relevant agencies might help obtain access to buildings. She mentioned that Governor Pataki could be asked to grant EPA access to all buildings. Gilman said that, as a matter of policy, EPA does not want to force access to buildings when the owners are unwilling to participate in the sampling program.

Community Suggestion/Concern: Will the occupants of the rest of the units be notified that WTC COPCs were found and will the other residents or workers be given the opportunity to have their units tested?

Gilman responded that a communication plan is needed that outlines a method for sharing the general results of the sampling with the rest of the building, subject to privacy concerns. Prezant wanted to know whether for cases with a degree of statistical uncertainty, sampling additional units would allow the statisticians to make a decision. Lippmann said that it might bias the results. Kahn noted that it is better to have more samples to get a better characterization of the building. The variability between the units will be an important factor.

Community Suggestion/Concern: Will "exceedances" be reported to occupants? To neighbors? To co-workers? To maintenance workers? To the public?

Gilman said that the information would be shared with the tenants and building owners. However, he doubted that EPA could tell them which specific units were contaminated, as that would violate individuals' rights to privacy. Newman thought that there were OSHA standards that gave employees rights to see environmental sampling data. McVay Hughes emphasized the

importance of sharing the information in a confidential way. Prezant suggested developing a disclosure statement that outlines exactly how the information will be shared and with whom.

A community member was concerned that the panel would not have the information it needed to help EPA determine next steps, if the data could not be made available due to privacy issues. Gilman said he would check that the data could be released to the panel, given that the members signed nondisclosure forms.

Community Suggestion/Concern: What materials might be used for the WTC signature?

Gilman commented that slag wool might be the key material for the WTC dust signature, since it is not commonly found in urban or construction dust. PAH ratios may be part of the analysis for the WTC combustion signature. However, Meeker reiterated the need for background samples to confirm these proposals.

Community Suggestion/Concern: Clarify and specify the objective criteria that need to be met to determine the presence or absence of the signature in tested residences and workplaces.

Gilman replied that a team of people will take Meeker's and RJ Lee's observations to create a methodology that a commercial laboratory can use to analyze for the WTC signature. Technical experts and other agencies will review the certified method to verify its credibility. Because an exact method has not been developed, he does not have all the answers. He can speculate that, if the slag wool theory is proven true, then it might be a matter of presence or absence, rather than a complex set of statistical ratios.

McVay Hughes asked what methods are used to clean slag wool. Lippmann responded that slag wool is not the hazard, but rather potentially an indicator of the WTC signature. It would be cleaned up like any other fiber (e.g., with a vacuum cleaner, like asbestos).

Community Suggestion/Concern: What actions would be taken in a unit or building where COPCs are present above benchmarks, but the WTC signature is not present or not available because it was not validated?

Gilman and Prezant responded that if there is a validated WTC signature, but it was not found in the unit, no cleanup action would be taken, even when there is an exceedance of a COPC benchmark. Cleanup will occur for an entire building if the 95 percent UCL on the mean of all measurements in the building associated with WTC dust exceeds the cleanup criteria for at least one COPC. Prezant noted that if a COPC benchmark is exceeded, the unit owner would be left with a big problem that "we're not answering." He suggested that EPA develop educational packages that explain the reasons for the decision to not offer cleanup. Specifically, if COPCs are not found above benchmarks, the unit owner/residents should be re-assured that their property values are not going to be impacted.

Gilman said that the current proposal does not define cleanup criteria in the absence of a validated signature. He stated that if a WTC signature cannot be identified or is unreliable, EPA will share the general results of the sampling with the public and the panel to ask their input

regarding possible cleanup or other follow-up activities, and will use that input along with other information, to determine next steps. Prezant commented that the community has asked that sampling occur concurrent with the signature study. Therefore, this scenario needs to be resolved if EPA expects people to support the program and allow sampling.

Wilkenfeld expressed concern that some people may not accept that the signature is valid. He suggested that the unit be offered cleanup if a COPC exceeds the benchmark, regardless of whether the WTC signature is present. Gilman replied that the funds have been allocated to cleanup WTC contamination. He also noted that COPCs found above the benchmarks do not necessarily indicate a potential health risk because not all the criteria are health-based. Prezant's personal opinion is that WTC money should not be made available for non-WTC contamination.

Community Suggestion/Concern: How will cleanup methodologies be determined?

Gilman noted that, for planning purposes, a cleanup protocol similar to that used during the Clean and Test Program has been proposed. However, it will be modified based on lessons learned during that program.

Community Suggestion/Concern: If a WTC signature is validated and COPCs exceed benchmarks, does money exist to clean up the unit?

Gilman replied that EPA has drafted an interagency agreement with the Federal Emergency Management Agency (FEMA). He hopes that the agreement will be signed soon. The estimate is between $7 and $10 million, and currently there is $7 million allocated for this effort. Senator Clinton has committed to supporting additional requests if the funds are insufficient.

Community Suggestion/Concern: Unmet Public Health Needs

Perera expressed concern over the need for sustained funding to evaluate and support community populations affected by the WTC collapse. Wilkenfeld commented that people who feel they have WTC-related illnesses have nowhere to go. He said that Mount Sinai has a long waiting list and that individuals' primary care physicians may not have the expertise needed to deal with WTC-related illnesses. He suggested that, to meet the health needs of the community, an occupational health center should be opened downtown. Prezant noted that there are many excellent physicians in the area who could be educated on WTC-related issues. He proposed that the NYC Department of Health and Mental Hygiene help educate the resident primary care physicians. Wilkenfeld agreed that physician education was a good idea, however, he was discouraged that after three years nothing had been done to address this public health need.

7. PUBLIC COMMENTS

Two public comment sessions were held during the meeting: from 11:26 a.m. to 12:07 p.m. (scheduled from 11:00 a.m. to 12:00 p.m.) and from 4:26 to 5:09 p.m. (scheduled from 4:00 p.m. to 5:00 p.m.). The following members of the public made comments to the panel:

- Marjorie Clark
- Kimberly Flynn
- Robert Gulak
- Robert Jaffe
- Stanley Mark
- Caroline Martin
- Suzanne Mattei
- Kathleen Moore
- Jenna Orkin
- Maureen Silverman
- Jeffrey Smith

Comments received in writing are provided in Attachment B.